

NRC INSPECTION MANUAL

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INSPECTION MANUAL CHAPTER 1245, APPENDIX C16

RESEARCH AND TEST REACTOR OPERATOR LICENSING EXAMINER
TECHNICAL PROFICIENCY TRAINING AND QUALIFICATION JOURNAL

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Introduction

This Appendix establishes the program for initial qualification of Research and Test Reactor (RTR) Operator Licensing (RTROL) Examiners and Chief Examiners through individual study activities (ISAs), formal classroom instruction, and on-the-job training (OJT).

General Requirements

You may begin the activities or complete the courses in this qualification journal while completing the Basic-Level Training and Qualification Journal (Appendix A) and General Proficiency-Level Training and Qualification Journal (Appendix B). Unlike Region-based Examiners, RTROL Examiners are not always expected to cross qualify as an RTR Inspector. Training Courses and ISAs that are geared for qualification as an inspector may be waived or deferred by the Branch Chief until subsequent qualification as an RTR Inspector pursuant to Appendix C5.

Full-time RTROL Examiners must complete all of the required training courses, ISAs, and OJT activities within 24 months after assignment to the RTROL Branch.

In accordance with IMC-1245, supervisors are expected to certify that the required training ISA and OJT activities, have been successfully completed by signing (electronically or otherwise) the items on the appropriate Signature and Certification Card. However, given that the RTROL Branch Chief (BC) may not necessarily be examiner-qualified, they may delegate evaluation of the required activities to a certified Chief Examiner, who would initial the items on the Card prior to certification by the RTROL BC. Although a qualification board is not required, every RTROL Examiner must satisfactorily administer a complete written examination and operating test pursuant to OJT-RTROL-2 and OJT-RTROL-3 prior to certification. These certification activities must be audited by a certified RTROL Examiner (preferably the RTROL BC) who will assess and document the RTROL Examiner candidate's performance on all activities of the RTR operator licensing examination, including pre-examination, preparation of written and operating tests, administration of examinations, and post-examination. The designated RTROL Examiner must also verify that the examiner candidate has in-depth knowledge of all the requirements of NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors." The auditor will provide a written recommendation whether or not to certify the examiner candidate, including the need for any remedial training, to the RTROL BC.

The RTROL BC and Division Director will document their concurrence with the auditor's recommendation by signing the candidate's RTROL Examiner Certification Card. Consistent with Section 04 of IMC 1245, the Director of the Office of Nuclear Reactor Regulation (NRR) shall certify that RTROL Examiners are qualified to independently administer operating tests. Completion of any remaining items for full examiner qualification shall be certified by the Division Director.

Chief Examiner certifications can be completed at the discretion of the RTROL BC. Part-time or reserve examiners will generally not be certified or assigned duties as a Chief Examiner. Chief Examiner certification is based on performance of OJT-RTROL-4 and OJT-RTROL-5 and a written recommendation by the RTROL BC; a qualification board is not required. The RTROL BC (or the designated Chief Examiner for OJT-RTROL-4 and OJT-RTROL-5) will assess and document the Chief Examiner candidate's performance on all activities of leading the RTR operator licensing examination, including pre-examination, preparation of written and operating tests, administration of examinations, and post-examination. The RTROL BC will provide a

written recommendation whether or not to certify the Chief Examiner candidate, including the need for any remedial training, to the Division Director for concurrence. Consistent with Section 04 of IMC 1245, the Director of NRR shall certify that Chief Examiners are fully qualified in accordance with this Appendix.

The Division Director can approve alternate methods or equivalency for meeting selected training courses, ISAs, and OJT requirements in this Appendix. Justifications for accepting alternate methods or equivalency (e.g., previously holding a reactor operator (RO) or senior reactor operator (SRO) license, qualified RTR project manager, qualified RTR inspector) must be documented on Form 1 and are subject to review by the RTROL program office.

Required RTROL Examiner Training Courses

Before signing up for any course, be sure that you have met any prerequisites.

- Research and Test Reactor Technology: Introduction (R-106)
- Research and Test Reactor Technology: Regulatory Oversight (R-206)
- Research and Test Reactor Technology: Nuclear Theory (R-306)
- Research and Test Reactor Technology: Operation (R-406)
- Written Examination Techniques (G-107)

The RTR Technology Series should normally be completed before attending the Examination Techniques Course. The RTR Technology Series is currently being updated and is available on the Non-Power Production and Utilization Facility Licensing and Oversight SharePoint page and, by request, from the NRC Technology Training Center.

The Written Examination Techniques Course (G-107), which includes instruction on both operating test and written examination techniques, is scheduled and conducted as needed. The Written Examination Techniques Course is required for examiners seeking full certification. RTROL Examiner candidates should complete ISA-RTROLE-5 before attending written examination techniques. The operating examination techniques is not required for RTROL Examiner candidates as this course focuses on BWR/PWR reactor technologies and use of simulators for the operating test.

Document completion of the required training courses on the Signature Card.

RTROL Examiner Individual Study Activities

The ISAs outline the operator licensing program reference materials that will enable RTROL Examiner candidates to develop the specialized knowledge required to become certified RTROL Examiners and Chief Examiners.

The following general guidance applies as the RTROL Examiner candidate completes the ISAs:

- The activities should generally be completed in the order in which they are presented, unless otherwise directed by the RTROL BC.
- All parts of each activity must be completed.
- The RTROL BC will act as a resource as you complete each activity. Discuss any questions you may have about how a task must be done or how the guidance is applied. The RTROL BC may also designate a qualified Chief Examiner to work with you as you complete the various activities.
- You are responsible for keeping track of what tasks you have completed. Be sure that you have completed all aspects of an activity before you meet with the RTROL BC for evaluation.

RTROL Examiner Individual Study Activity

- TOPIC:** (ISA-RTROLE-1) Navigating the Operator Licensing Web Pages
- PURPOSE:** The purpose of this activity is to familiarize you with the navigation and content of the NRC's non-power facilities web page. RTROL Examiners must routinely access and review a variety of documents to support their work activities. This individual study activity will familiarize you with the web locations of those documents.
- COMPETENCY AREA:** INFORMATION TECHNOLOGY
- LEVEL OF EFFORT:** 2 hours
- REFERENCES:**
1. Non-Power Facilities Home Page
(<https://www.nrc.gov/reactors/non-power.html>)
 2. Locations of Nonpower Production and Utilization Facilities
(<https://www.nrc.gov/info-finder/nonpower/>)
 3. Non-Power Production and Utilization Branches
(<https://usnrc.sharepoint.com/teams/NRR-DANU-UNPL-UNPO>)
- EVALUATION CRITERIA:** There are no specific evaluation criteria for this activity. Use the RTROL BC or a certified RTROL Examiner as a resource as you complete this activity.
- TASKS:**
1. Open your web browser and go to the Non-Power Facilities Home Page. Add a bookmark for future reference.
 2. Familiarize yourself with the general layout. Navigate through each of the pages accessible from the home page. Try out some of the embedded hyperlinks to the various documents related to the RTROL program.
 3. Make a mental note of the document locations as you will need to refer to many of them while completing the remainder of the RTROL Examiner training and qualification program and after you are certified as an RTROL Examiner.
- DOCUMENTATION:** RTROL Examiner Signature and Certification Card Item ISA-RTROLE-1

RTROL Examiner Individual Study Activity

TOPIC: (ISA-RTROLE-2) History and Organization of the Operator Licensing Program

PURPOSE: The purpose of this activity is to familiarize you with the evolution of the RTROL program and the statutory / regulatory framework under which it functions.

COMPETENCY AREA: REGULATORY FRAMEWORK

LEVEL OF EFFORT: 16 hours

REFERENCES:

1. Section 107, "Operators' Licenses," Atomic Energy Act of 1954
2. Section 306, "Nuclear Regulatory Commission Training Authorization," Nuclear Waste Policy Act of 1982
3. 10 CFR Part 55, "Operators' Licenses"
4. 10 CFR 50.54, "Conditions of Licenses," paragraphs (i) - (m)
5. Federal Register, Vol. 52, No. 57, March 23, 1987, "Nuclear Regulatory Commission 10 CFR Parts 50 and 55 Operators' Licenses and Conforming Amendments final rule"
6. NUREG-1262, "Answers to Questions at Public Meetings Regarding Implementation of Title 10, Code of Federal Regulations, Part 55 on Operators' Licenses"
7. NRC Organization Charts and Delegation of Authority

EVALUATION CRITERIA: Upon completing this activity, you will be asked to demonstrate your understanding of the RTROL program history and regulatory framework as follows:

1. Discuss the statutory requirements for the RTROL program as stated in the Atomic Energy Act of 1954.
2. Discuss the statutory and regulatory changes put into effect by the Nuclear Waste Policy Act of 1982, including the 1987 final amendment to 10 CFR 55.
3. Discuss the layout and major subparts of 10 CFR Part 55.
4. Outline the major offices having RTROL responsibilities and briefly describe the functioning of the RTROL program.
5. Describe the RTROL organization.

TASKS:

1. Locate and review the statutory requirements for the RTROL program.

2. Locate and read 10 CFR Part 55 (available on the NRC public website). Become familiar with its overall layout and format.
3. Locate and review the Federal Register Notice (FRN) for the 1987 amendment to Part 55, which implemented Section 306 of the NWPA of 1982. A copy of the FRN is located in NUREG-1262. Briefly review some of the questions and answers in the NUREG to get a sense for its content, as it may be a useful reference in the future.

Note: NUREG-1262 provides a useful historical perspective but that some of the answers have been overtaken by changes in the operator licensing regulations, policies, and guidance. However, it is generally NOT applicable to the RTROL program.

4. Locate a copy of 10 CFR Part 50 (available on the NRC public website) and review the facility license conditions applicable to the RTROL program.
5. Locate and review an NRC organization chart, with emphasis on the RTROL organization.

DOCUMENTATION: RTROL Examiner Signature and Certification Card Item ISA-RTROLE-2

RTROL Examiner Individual Study Activity

TOPIC:	(ISA-RTROLE-3) License Eligibility Requirements and Guidelines
PURPOSE:	The purpose of this activity is to familiarize you with the regulatory requirements, regulatory guidelines, and industry standards related to NRC reactor operator and senior operator license eligibility.
COMPETENCY AREA:	REGULATORY FRAMEWORK
LEVEL OF EFFORT:	16 hours
REFERENCES:	<ol style="list-style-type: none">1. 10 CFR Part 55, "Operators' Licenses"2. NRC Form 396, "Certification of Medical Examination by Facility Licensee"3. NRC Form 398, "Personal Qualification Statement – Licensee"4. Licensing Basis Documents (TS and SAR)5. NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors"6. NUREG-1537, "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors"7. ANSI/ANS 15.1, "Development of Technical Specifications for Research Reactors"8. ANSI/ANS 15.4, "Selection and Training of Personnel for Research Reactors"9. ANSI/ANS 3.1, "Selection, Qualification, and Training of Personnel for Nuclear Power Plants" *10. ANSI/ANS 3.4, "Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants" *11. NRC Operator License Eligibility Requirements (National Academy of Nuclear Training Guideline Summary) (https://www.nrc.gov/docs/ML1905/ML19053A433.pdf) *12. Regulatory Guide 1.134, "Medical Evaluation of Licensed Personnel at Nuclear Power Plants" *13. Regulatory Guide 1.8, "Qualification and Training of Personnel for Nuclear Power Plants" *14. Regulatory Issue Summary 2001-01, "Eligibility of Operator License Applicants" *15. Information Notice (IN) 91-08, "Medical Examinations for Licensed Operators" *16. IN 94-14, "Failure to Implement Requirements for Biennial Medical Examinations and Notifications to the NRC of Changes in Licensed Operator Medical Conditions" *17. IN 97-67, "Failure to Satisfy Requirements for Significant Manipulations of the Control for Power Reactor Licensing" *18. IN 98-37, "Eligibility of Operator Licensing Applicants" *19. IN 04-20, "Recent Issues Associated with NRC Medical Requirements for Licensed Operators" *20. IN 09-21, "Incomplete Medical Testing for Licensed Operators" *

21. IN 12-10, "Recent Issues Associated with Submittal of NRC Form 396, Certification on Medical Examination by Facility Licensee, for Applicants and Licensed Operators at Non-Power Reactors"
- * For information only. Not applicable to RTRs.

**EVALUATION
CRITERIA:**

At the completion of this activity you should be able to:

1. Discuss the regulatory requirements for operator license eligibility, including medical fitness, waivers and exemptions, license application process, and facility licensing basis documents.
2. Discuss the background documents (ANSI, RG, etc.) that provide guidance regarding licensed operator experience and training.
3. Discuss the background documents (ANSI, RG, etc.) that provide guidance regarding licensed operator medical qualifications.

TASKS:

1. Review 10 CFR Part 55, which covers the regulatory requirements for operator license eligibility, including medical fitness, exemptions, and the license application process. Also review 10 CFR 55.47, "Waiver of examination and test requirements," regarding examination waivers.
2. Review IN 97-67, IN 98-37, and RIS 2001-01. Obtain a copy of and review the background documents (e.g. ANSI/ANS 15.4) that provide guidance regarding licensed operator experience and training. Familiarize yourself with the guidelines for other staff positions, focusing primarily on licensed operators and senior operators. Be familiar with the various revisions of ANSI/ANS 15.4, as different facilities may be committed to earlier revisions.
3. Review the background documents (e.g. ANSI/ANS 15.4) that provide guidance regarding licensed operator medical qualifications. Be familiar with the various revisions of ANSI/ANS 15.4, as different facilities may be committed to earlier revisions.

DOCUMENTATION: RTROL Examiner Signature and Certification Card Item ISA-RTROLE-3

RTROL Examiner Individual Study Activity

TOPIC: (ISA-RTROLE-4) Technical Specifications

PURPOSE: The NRC requires that licensees operate their facilities in compliance with Technical Specifications (TS) approved by the NRC. The TS provide the limits for facility operation that the licensee must comply with or receive NRC approval to deviate from the requirements. For this reason, it is mandatory that all examiners gain a detailed knowledge of the content of the TS. This activity will provide you with detailed knowledge of the contents of the TS, where a requirement exists for any specific topic, and how to apply the TS requirements.

COMPETENCY AREA: REGULATORY FRAMEWORK, TECHNICAL AREA EXPERTISE

LEVEL OF EFFORT: 24 hours

REFERENCES:

1. TSs for a facility designated by RTROL BC
2. 10 CFR 50.36, "Technical Specifications"
3. NUREG-1537, "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors"
4. ANSI/ANS 15.1, "Development of Technical Specifications for Research Reactors"

EVALUATION CRITERIA: At the completion of this activity, you should be able to:

1. For the facility TS, as designated by RTROL BC, be able to identify each TS section, discuss the general content of the requirements contained in each section, and the basis for issuing the requirements.
2. Discuss the following with respect to the operating license: legal basis, purpose, license conditions, and how the license can be changed.
3. Discuss the definition of the terms found in the TS.
4. Discuss the safety limits and limiting safety system settings listed and the significance of these limits.
5. Discuss the requirements for limiting conditions for operation (LCO) and surveillance testing, and what actions are required if the requirements are not met.
6. Discuss the different sections of LCOs and the reason for the basis section provided with each LCO section.

7. Discuss the Design Features section of the TS and the types of information located in this section.
8. Discuss the Administrative Controls section of the TS and the types of information located in this section.

TASKS:

1. Locate a copy of the TS for the facility designated by RTROL BC.
2. Review the various sections of the TS, as listed in the Evaluation Criteria section.

DOCUMENTATION: RTROL Examiner Signature and Certification Card Item ISA-RTROLE-4

RTROL Examiner Individual Study Activity

TOPIC:	(ISA-RTROLE-5) Operator Licensing Process: Pre-Examination and Application Activities
PURPOSE:	The purpose of this activity is to familiarize you with pre-examination activities and the application process, including: applicant responsibilities, facility responsibilities, examiner responsibilities, handling of forms, establishing docket files, and the approval and documentation of deferrals, excusals, and waivers. It also provides exposure to the Reactor Program System – Operator Licensing (RPS-OL), Operator Digitized Docket (ODD), and docket files.
COMPETENCY AREA:	REGULATORY FRAMEWORK, TECHNICAL AREA EXPERTISE
LEVEL OF EFFORT:	16 hours
REFERENCES:	<ol style="list-style-type: none">1. 10 CFR Part 55, “Operators’ Licenses”2. NRC Form 396, “Certification of Medical Examination by Facility Licensee”3. NRC Form 398, “Personal Qualification Statement – Licensee”4. NUREG-1478, “Operator Licensing Examiner Standards for Research and Test Reactors”5. ANSI/ANS 15.4, “Selection and Training of Personnel for Research Reactors”6. Operator Digitized Docket (ODD) (https://adamsicm.nrc.gov/ODD/) and associated user guides (located in the non-public ODD system under the “Help” tab)7. Reactor Program Systems – Operator Licensing (RPS-OL) (https://rrps.nrc.gov/OLTS/Home/OL) (non-public)
EVALUATION CRITERIA:	<p>At the completion of this activity you should be able to:</p> <ol style="list-style-type: none">1. Discuss the regulatory requirements associated with the license application process. Discuss the regulatory basis associated with licensee certification. [10 CFR 55 Subpart D, 10 CFR 55.31(a)(6)]2. Describe the major tasks associated with examination scheduling, coordinating examination visits, assignment of examiners, reviewing license applications, pre-examination site visits and facility pre-examination reviews. Describe how docket files are established. [ES-201N]3. Describe the major tasks associated with identifying the experience, training, education, and certification requirements and guidelines that applicants should satisfy before they will be allowed to take an RO or SRO license examination. [ES-202N]

4. Discuss the deferral/excusal/waiver process, the types of deferrals/excusals/waivers, who has the authority to approve them, and how they are documented. [10 CFR 55.47, ES-203N]
5. Discuss the implementation of the license renewal application process, including the timely renewal process and the procedures for denying an application for license renewal. Describe NRC Form 398. [ES-204N]
6. Discuss the handling of forms, establishment of docket files, the making of RPS-OL entries and the use of ODD.

TASKS:

1. Review ES-201N Attachment 1: Sample Examination Notification Letter and ES-201N Attachment 2: Sample Examination Assignment Sheet of NUREG-1478 and familiarize yourself with its content. Pay particular attention to applicant responsibilities and examination security guidelines in ES-201N Attachment 1.
2. Review ES-202N Attachment 1: Sample Initial Application Denial of NUREG-1478 and familiarize yourself with its content.
3. Review the waiver/excuses process in ES-203N of NUREG-1478. Familiarize yourself with the approval and documentation of waivers/excuses.
4. Review ES-204N Attachment 1 and Attachment 2: Sample Renewal Application Denial Letter of NUREG 1478 and familiarize yourself with the license renewal application process.
5. Obtain access to ODD and RPS-OL by contacting the operator licensing assistant (OLA) for ODD access and RPSSupport@nrc.gov for RPS-OL access. Review desktop and user guides for the systems using links within each system (under the "help" button).
6. Discuss the process to use ODD with the OLA or a qualified examiner and obtain a demonstration of how to electronically sign necessary examination documents. Discuss the process for using RPS-OL with the OLA and obtain a demonstration of key functions.
7. Request access to the digital docket files from the OLA and review a sample of docket files to familiarize yourself with their contents.

DOCUMENTATION: RTROL Examiner Signature and Certification Card Item ISA-RTROLE-5

RTROL Examiner Individual Study Activity

TOPIC:	(ISA-RTROLE-6) Operator Licensing Process: Operating Tests
PURPOSE:	The purpose of this activity is to familiarize you with the development, administration, and grading of initial operator licensing operating tests.
COMPETENCY AREA:	TECHNICAL AREA EXPERTISE
LEVEL OF EFFORT:	40 hours
REFERENCES:	<ol style="list-style-type: none">1. 10 CFR Part 55, "Operators' Licenses"2. NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors"
EVALUATION CRITERIA:	<p>At the completion of this activity you should be able to:</p> <ol style="list-style-type: none">1. Explain the regulatory basis for the operating test. [10 CFR 55.45(a)]2. Describe the major tasks associated with preparing an operating test: "Operating Tests", the three different levels of examination applicable to a facility type, the guidelines used to differentiate between RO and SRO operating test, and the source of material that will drive the content of the operating test. [ES-301N]3. Describe the three major categories of the operating test – Category A (Administrative Topics), Category B (Facility Walkthrough) and Category C (Integrated Facility Operations). [ES-301N]4. Describe the major tasks associated with administering an operating test, in particular how to conduct a facility walkthrough. [ES-302N]5. Describe the major tasks associated with grading an operating test. Understand the general evaluation guidelines used to grade the exam. Understand how to document operating test comments (candidates weaknesses found during the operating test) to better grade an exam. [ES-303N]
TASKS:	<ol style="list-style-type: none">1. Review 10 CFR 55.45 to familiarize yourself with the regulatory basis for the operating test.2. Review ES-301N Attachment 1, Form ES-301N-1 "Research and Test Reactor Operator Licensing Individual Examination Report", ES-301N Attachment 2 (Systems for Operating Tests) and ES-301N attachment 3 (Facility Listing by Type) of NUREG-1478 and familiarize yourself with its content.

3. Review ES-302N Attachment 1 (Operating Test Briefing Checklist) and Form ES-302N-1 "Examination Security Agreement" of NUREG-1478 and familiarize yourself with its content.
4. Review ES-303N Form ES-303N-1 "RO/SRO Competency Grading Guidance for Integrated Facility Operations" of NUREG-1478 and familiarize yourself with its content.

DOCUMENTATION: RTROL Examiner Signature and Certification Card Item ISA-RTROLE-6

RTROL Examiner Individual Study Activity

TOPIC: (ISA-RTROLE-7) Operator Licensing Process: Written Examinations

PURPOSE: The purpose of this activity is to familiarize you with the development, administration, and grading of the initial operator licensing written examination.

COMPETENCY AREA: TECHNICAL AREA EXPERTISE

LEVEL OF EFFORT: 40 hours

REFERENCES: 1. 10 CFR Part 55, "Operators' Licenses"
2. NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors"

EVALUATION CRITERIA: At the completion of this activity you should be able to:

1. Explain the regulatory basis for the written examination. [10 CFR 55.41, 10 CFR 55.43]
2. Describe the general guidelines and instructions for the exam preparation, the use of reference material and the examination assembly. Describe the three major examination categories – Category A (Reactor Theory, Thermodynamics, and Facility Operating Characteristics), Category B (Normal and Emergency Operating Procedures and Radiological Controls), and Category C (Facility and Radiation Monitoring Systems). Describe the exam quality assurance review process. [ES-401N]
3. Explain the three principle aspects of examination validity and the techniques that the NRC uses to maintain the validity of its examinations. Explain the concept of examination reliability and how it is maintained on NRC examinations. [ES-401N]
4. Describe the major tasks associated with administering a written exam in particular the guidelines given for the examination facilities, proctoring the examinations, examination administration and the facility staff review of the written examination. [ES-402N]
5. Describe the major tasks associated with grading a written exam, including the requirements and procedures for resolving facility comments. [ES-403N]

TASKS: 1. Review 10 CFR 55.41 and 55.43 to familiarize yourself with the regulatory basis for the written examination

2. Review ES-401N, Attachment 1, which includes: “Sample Written Examination Cover Sheet”, “NRC Rules for Written Examination Administration”, “Equation Sheet”, and “Answer Sheets” and familiarize yourself with its content.
3. Review Form ES-401N-1, “Written Examination Quality Assurance Checkoff Sheet,” and familiarize yourself with its content.
4. Locate and review a recently completed written examination, including copies of the facility licensee’s submittal, the reviewing examiners’ comments, the final examination, any associated quality checklists, and any post-exam comments / resolutions. Discuss any questions you might have with the responsible Chief Examiner.

DOCUMENTATION: RTROL Examiner Signature and Certification Card Item ISA-RTROLE-7

RTROL Examiner Individual Study Activity

- TOPIC:** (ISA-RTROLE-8) Operator Licensing Process: Post Examination Peer Review
- PURPOSE:** The purpose of this activity is to familiarize yourself with the procedures for assembling and reviewing the examination package.
- COMPETENCY AREA:** TECHNICAL AREA EXPERTISE, ASSESSMENT
- LEVEL OF EFFORT:** 16 hours
- REFERENCES:**
1. 10 CFR Part 55, "Operators' Licenses"
 2. NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors"
- EVALUATION CRITERIA:** At the completion of this activity, you should be able to:
1. Describe the major tasks associated with the post examination activities, including the preparation of the examination report, the examination results letter (results package with public and non-public enclosures), examination peer review, licensing actions, facility and individual notification, record retention in ADAMS. [ES-501N]
- TASKS:**
1. Review and familiarize yourself with ES-501N Attachment 1, "Sample Examination Report (Public)", ES-501N Attachment 2 "Sample Results Cover Letter (Public)", ES-501N Attachment 3 "Sample License Letters (Nonpublic)", ES-501N Attachment 4, "Proposed Denial Letter (Nonpublic)" and Form ES-501N-1, "Research and Test Reactor Plant Examination, Results Summary Sheet (Nonpublic)".
- DOCUMENTATION:** RTROL Examination Signature and Certification Card Item ISA-RTROLE-8

RTROL Examiner Individual Study Activity

TOPIC: (ISA-RTROLE-9) Operator Licensing Process: Reviews and Hearings

PURPOSE: The purpose of this activity is to familiarize you with the procedures for conducting examination reviews and formal hearings in response to applicant appeals of proposed license denials.

COMPETENCY AREA: REGULATORY FRAMEWORK

LEVEL OF EFFORT: 16 hours

REFERENCES:

1. 10 CFR Part 2
2. 10 CFR Part 55
3. NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors"

EVALUATION CRITERIA: At the completion of this activity you should be able to:

1. Discuss the regulatory basis for the appeal and hearing process. [10 CFR 2.103, 10 CFR 2 Subpart L, 10 CFR 55.35]
2. Explain the responsibilities of the various parties involved in the appeal and hearing process.
3. Describe the review procedures for application denials and proposed examination failures.
4. Describe the operator licensing appeal hearing process used by the Atomic Safety and Licensing Board (ASLB).
5. Describe the issues raised by the ASLB that led them to overturn the staff's denial of a senior reactor operator license for an applicant from the Vogtle Electric Generating Plant in 2014.

TASKS:

1. Review and familiarize yourself with ES-502N Attachment 1, "Sample License Notification Letter from Division Director", ES-502N Attachment 2, "Proposed License Denial Letter from Division Director", ES-502 Attachment 3, "Initial Application Denial Letter from Division Director."

DOCUMENTATION: RTROL Examiner Signature and Certification Card Item ISA-RTROLE-9

RTROL Examiner Individual Study Activity

- TOPIC:** (ISA-RTROLE-10) Operator Licensing Process: Requalification, Requalification Examination, Failures, Reviews, Hearings, and Other License Conditions
- PURPOSE:** The purpose of this activity is to familiarize you with the NRC's program for overseeing licensed operator requalification training programs and monitoring and enforcing operators' compliance with other license conditions.
- COMPETENCY AREA:** REGULATORY FRAMEWORK, TECHNICAL AREA EXPERTISE
- LEVEL OF EFFORT:** 16 hours
- REFERENCES:**
1. 10 CFR Part 55
 2. NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors"
- EVALUATION CRITERIA:** At the completion of this activity you should be able to:
1. Discuss the regulatory basis for requalification. [10 CFR 55.59]
 2. Discuss the regulatory conditions with which licensed operators must comply, including expiration, renewal, and requalification. [10 CFR 55.53]
 3. Discuss the conditions under which the NRC could revoke, modify, or suspend an operator's license and those under which it could take enforcement action.
 4. Describe the NRC's program for overseeing licensed operator requalification training programs, including periodic inspections and NRC-conducted examinations and the conditions under which each would be performed.
 5. Discuss the guidelines given for examination schedule, preparation, administration, and grading (Form ES-601N-1 and Form ES-601N-2) of an NRC requalification written and operating test examination. [ES-601N]
 6. Discuss the guidelines given for the requalification program evaluation, actions for requalification program deficiencies, final requalification program evaluation report (Form ES-601N-3), Individual requalification examination report (Form ES-601N-4) and record retention.

7. Discuss the results (passing and failure) of NRC-conducted requalification examination. Discuss the process of overturning requalification examinations or renewals denials. [ES-602N]

TASKS:

1. Review 10 CFR 55.59 to familiarize yourself with the requirements for licensed operator requalification programs.
2. Review 10 CFR 55.53 to familiarize yourself with the requirements for licensed operator conditions.
3. Review ES-601N Attachment 1: Notification Letter and ES-601N Attachment 2: Briefing Checklist – Operating Test Tasks of NUREG-1478 and familiarize yourself with its content.
4. Review Form ES-601N-1 “Requalification Examination Operating Test Record”, Form ES-601N-2 “Examination Cover Sheet”, Form ES-601N-3 “Research and Test Reactors Requalification Results Summary Sheet”, and Form ES-601N-4 “Individual Requalification Examination Report” of NUREG-1478 and familiarize yourself with its content.
5. Review ES-602N Attachment 1: Requalification Examination Pass Letter, ES-602N Attachment 2: Requalification Examination Failure letter and ES-602N Attachment 3: Requalification Examination Second Failure Letter of NUREG-1478 and familiarize yourself with its content.

DOCUMENTATION: RTROL Examiner Signature and Certification Card Item ISA-RTROLE-10

RTROL Examiner Individual Study Activity

TOPIC: (ISA-RTROLE-11) SRO Limited to Fuel Handling

PURPOSE: The purpose of this activity is to familiarize you with the guidelines and instructions for pre-administration, preparing, and administering senior reactor operator limited to fuel handling (LSRO) licenses examinations.

COMPETENCY AREA: TECHNICAL AREA EXPERTISE

LEVEL OF EFFORT: 8 hours

REFERENCES: 1. 10 CFR Part 55
2. NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors"

EVALUATION CRITERIA: At the completion of this activity you should be able to:

1. Discuss the guidelines and instructions for pre-administration activities in support of LSRO examinations at research and test reactors that have been permanently shut down. ES-701N supplements guidance contained in ES-201N, ES-202N, ES-203N, and ES-204N for administering initial examinations.
2. Discuss the guidelines and instructions for preparing LSRO examinations. ES-702N supplements guidance contained in ES-301N, ES-303N, ES-401N, ES-402N, and ES-403N for administering initial examinations.
3. Discuss the guidelines and instructions for administering LSRO examinations. ES-703N supplements guidance contained in ES-302N and ES-402N.
4. Discuss the guidelines and instructions for grading and documenting LSRO examinations. ES-704N supplements guidance contained in ES-303N and ES-403N for grading initial examinations.

TASKS: 1. Review ES-701N, ES-702N, ES-703N and ES-704N to familiarize yourself with the differences between the examination process that is used to license SROs whose responsibilities are limited to fuel handling and a regular Operating License examination

DOCUMENTATION: RTROL Examiner Signature and Certification Card Item ISA-RTROLE-11

RTROL Examiner On-the-Job Training Activities

The OJT activities require RTROL Examiner candidates to conduct examination-related work, under supervision, at reactor facilities and in the regional office. These activities are designed to allow examiner candidates to observe and perform key examiner tasks under controlled circumstances. Like the individual study activities, each of the OJT activities indicates why the activity is important, how much time it might take to complete the assignment, and what is expected to be completed successfully during the activity.

The following general guidance applies as you complete the RTROL Examiner OJT Activities:

- The activities should generally be completed in the order in which they are presented, unless otherwise directed by the RTROL BC.
- All parts of each activity must be completed.
- The RTROL BC will act as a resource as you complete each activity. Discuss any questions you may have about how a task must be done or how the guidance is applied. The RTROL BC may also designate a qualified RTROL Examiner to work with you as you complete the various activities.
- You are responsible for keeping track of what tasks you have completed. Be sure that you have completed all aspects of an OJT activity before you meet with the RTROL BC for evaluation.

RTROL Examiner On-the-Job Training Activity

TOPIC:	(OJT-RTROLE-1) Observe Initial Licensing Examinations
PURPOSE:	The purpose of this activity is to familiarize you with the on-site activities performed by operator license examiners. This on-the-job training will prepare you to conduct initial operator licensing examinations in accordance with NUREG-1478.
COMPETENCY AREA:	TECHNICAL AREA EXPERTISE, INSPECTION, ASSESSMENT AND ENFORCEMENT
LEVEL OF EFFORT:	160 hours
REFERENCES:	<ol style="list-style-type: none">1. NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors"2. Proposed examinations and operating tests3. Individual operating test reports4. The examination report
EVALUATION CRITERIA:	<p>Complete the activities outlined in this guide and meet with the RTROL BC to discuss any questions you may have. Upon completion of the tasks in this guide, you should be able to:</p> <ol style="list-style-type: none">1. Describe the procedure for reviewing / validating draft operator licensing examinations with the facility licensee.2. Describe the miscellaneous on-site activities associated with the administration of operator licensing examinations, including the entrance and exit meetings, applicant briefings, and proctoring the written examination.3. Describe the policies and procedures for conducting, documenting, and evaluating all aspects of the operating test.
TASKS:	<ol style="list-style-type: none">1. In preparation for the on-site activities, review ES-302N, ES-303N, ES-402N, ES-403N, and the proposed written examination and operating tests, including the NRC's review comments.2. Participate in at least two written examination and operating test reviews / validations. Discuss any observations and questions you may have with the Chief Examiner or RTROL BC.

3. Participate in at least two examination site visits, with different RTROL Examiners, if possible; observation trips to different reactor types are encouraged. Observe all significant on-site activities including the entrance briefing (if one is requested), the applicant briefings, all examination team discussions, and the exit meeting. Discuss any observations and questions you may have with the RTROL Examiner or RTROL BC.
4. While on-site, observe as many complete operating test administrations as possible, including at least one RO, one instant SRO, and one upgrade SRO, administered by as many different examiners as possible. During each test, try to anticipate the need for follow-up questions based on the applicant's performance of the task. Discuss any observations and questions you may have with the examiner of record after the test is complete.
5. For the worst-performing applicant you observed during each exam assignment, independently evaluate and document the applicant's performance in accordance with ES-303. Discuss your write-up with the RTROL Examiner. Also, review the operating test documentation for each applicant whose test you observed, and discuss the results with the examiner of record.

DOCUMENTATION: RTROL Examiner Signature and Certification Card Item OJT-RTROLE-1

RTROL Examiner On-the-Job Training Activity

- TOPIC:** (OJT-RTROLE-2) Prepare, Administer, and Grade an Operating Test
- PURPOSE:** The purpose of this activity is to familiarize you with the procedures for preparing, administering, and grading an operating test in accordance with NUREG-1478.
- COMPETENCY AREA:** TECHNICAL AREA EXPERTISE, INSPECTION, ASSESSMENT AND ENFORCEMENT
- LEVEL OF EFFORT:** 200 hours
- REFERENCES:**
1. NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors"
 2. Facility reference materials
- EVALUATION CRITERIA:** Complete the activities outlined in this guide and meet with the RTROL BC to discuss any questions you may have. Upon completion of the tasks in this guide, you will be able to:
1. Demonstrate your understanding of the operating test development procedures by preparing a complete operating test that meets the requirements of NUREG-1478, then obtain approval from the RTROL Examiner and RTROL BC to administer the test. (Note that the RTROL BC can approve partial or shared examinations on a case-by-case basis to accommodate resource or scheduling needs, but the examiner must participate in all activities at a $\geq 50\%$ level and demonstrate acceptable proficiency.)
 2. Demonstrate your understanding of operating test administration procedures and techniques by satisfactorily administering a complete RO or SRO-Instant operating test.
 3. Demonstrate your understanding of the operating test grading and documentation procedures by satisfactorily grading and documenting your applicant's performance during the audited operating test. Review your licensing recommendations with the RTROL Examiner and the RTROL BC.
- TASKS:**
1. Using ES-301N and the reference material provided by the facility licensee, prepare a complete RO or SRO-Instant operating test. Submit the test to the designated RTROL Examiner for review and approval, then incorporate whatever changes are necessary.
 2. In coordination with the designated RTROL Examiner, administer a complete RO or SRO-Instant operating test in accordance with ES-302N. Note that the entire operating test must be audited by a

designated RTROL Examiner (preferably the RTROL BC if they are certified), who will step in if necessary, to ensure that a valid licensing decision can be made. The auditor will provide verbal and written feedback regarding your test administration but should NOT discuss information that might bias your independent assessment of the applicant's performance.

3. As soon as possible after administering the operating test, evaluate and document your applicant's performance and make an independent licensing recommendation in accordance with ES-303N. Submit Form ES-303N-1 and any supporting documentation to the designated RTROL Examiner for review and approval. Discuss your licensing recommendations with the RTROL BC.

DOCUMENTATION: RTROL Examiner Signature and Certification Card Item OJT-RTROLE-2

RTROL Examiner On-the-Job Training Activity

TOPIC: (OJT-RTROLE-3) Prepare, Administer, and Grade a Written Examination

PURPOSE: The purpose of this activity is to familiarize you with the procedures for preparing, administering, and grading an initial operator licensing written examination in accordance with NUREG-1478.

COMPETENCY AREA: TECHNICAL AREA EXPERTISE, INSPECTION, ASSESSMENT AND ENFORCEMENT

LEVEL OF EFFORT: 500 hours

REFERENCES:

1. NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors"
2. Facility reference materials

EVALUATION CRITERIA: Complete the activities outlined in this guide and meet with the RTROL BC to discuss any questions you may have. Upon completion of the tasks in this guide, you will be able to:

1. Demonstrate your understanding of the written examination development procedures by preparing a written examination that meets the requirements of NUREG-1478 and obtaining approval from the RTROL BC to administer the examination. (Note that the RTROL BC can approve partial or shared examinations on a case-by-case basis to accommodate resource or scheduling needs, but the examiner must participate in all activities at a $\geq 50\%$ level and demonstrate acceptable proficiency.)
2. Demonstrate your understanding of written examination administration procedures.
3. Demonstrate your understanding of the written examination grading procedures by satisfactorily grading and documenting the applicant's performance on the written examination you prepared. Review your licensing recommendations with the designated RTROL Examiner and the RTROL BC.

TASKS:

1. Using ES-401N and the reference material provided by the facility licensee, prepare a complete written examination. Submit the examination and all forms required by the ES to the designated RTROL Examiner for review and approval, then incorporate whatever changes are necessary.
2. With the assistance of the designated RTROL Examiner, review the proposed examination with the facility licensee. Review the facility licensee's comments, incorporate question changes, as

appropriate, and submit the final examination and forms to the designated RTROL Examiner for review and approval.

3. In coordination with the designated RTROL Examiner, administer the written examination in accordance with ES-402N.
4. Grade the examinations in accordance with ES-403N. Develop and document proposed resolutions for any post-examination comments received from the facility licensee, complete the grading quality checklist, and forward the examination package to the RTROL Examiner for review and approval.

DOCUMENTATION: RTROL Examiner Signature and Certification Card Item OJT-RTROLE-3

Additional Chief Examiner On-the-Job Training Activities

These additional OJT activities require Chief Examiner candidates to oversee examination-related work at reactor facilities. These activities are designed to allow Chief Examiner candidates to observe and perform key tasks under controlled circumstances.

The following general guidance applies as you complete the Chief Examiner OJT activities:

- The activities should generally be completed in the order in which they are presented, unless otherwise directed by the RTROL BC. The Chief Examiner candidate may receive credit for activities that are performed during initial qualification as an RTROL Examiner.
- All parts of each activity must be completed.
- The RTROL BC will act as a resource as you complete each activity. Discuss any questions you may have about how a task must be done or how the guidance is applied. The RTROL BC may also designate a qualified Chief Examiner to work with you as you complete the various activities.
- You are responsible for keeping track of what tasks you have completed. Be sure that you have completed all aspects of an OJT activity before you meet with the RTROL BC for evaluation.

RTROL Chief Examiner On-the-Job Training Activity

TOPICS: (OJT-RTROLE-4) Participate on Licensing Examination Teams

PURPOSE: This OJT Activity is intended to increase the Chief Examiner candidate's proficiency in implementing the operator licensing examination procedures.

COMPETENCY AREA: TECHNICAL AREA EXPERTISE, INSPECTION, ASSESSMENT AND ENFORCEMENT

LEVEL OF EFFORT: 300 hours

REFERENCES: NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors"

EVALUATION CRITERIA: Candidates should be engaged in and satisfactorily perform all aspects of the assigned examinations as determined by the RTROL BC. No detailed evaluation criteria have been developed.

TASKS: Candidates should be engaged in and satisfactorily perform all aspects of the assigned examinations as determined by the RTROL BC. No detailed activities have been developed.

DOCUMENTATION: RTROL Chief Examiner Signature and Certification Card OJT-RTROLE-4

RTROL Chief Examiner On-the-Job Training Activity

TOPIC:	(OJT-RTROLE-5) Lead an Initial Examination Team
PURPOSE:	The purpose of this activity is to familiarize you with the procedures for coordinating and leading an initial operator licensing examination assignment in accordance with NUREG-1478.
COMPETENCY AREA:	TECHNICAL AREA EXPERTISE, INSPECTION, ASSESSMENT AND ENFORCEMENT
LEVEL OF EFFORT:	200 hours
REFERENCES:	NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors"
EVALUATION CRITERIA:	<p>Complete the activities outlined in this guide and meet with the RTROL BC to discuss any questions you may have. Upon completion of the tasks in this guide, you should be able to:</p> <ol style="list-style-type: none">1. Coordinate all the administrative activities involved in preparing for an initial examination assignment.2. Coordinate all on-site activities with the examination team members and the facility contact.3. Coordinate all the administrative activities associated with documenting and issuing the examination results.
TASKS:	<ol style="list-style-type: none">1. Under the direction of a certified Chief Examiner and in accordance with ES-201N, coordinate all administrative activities associated with preparing for an initial examination assignment. These activities should include: completing the initial communication (e.g. phone call or e-mail); preparing the examination confirmation letter to the facility licensee; coordinating review and approval of the examinations and tests; reviewing the license applications; resolving any deferral, excusal, or waiver requests; preparing the assignment sheet with the Operator Licensing Assistant; reviewing the operating test administration schedule; and, coordinating the travel arrangements.2. Under the direction of a certified Chief Examiner and in accordance with ES-302N and ES-402N, oversee all on-site activities associated with the administration of the written examinations and operating tests. This should include coordinating all interactions between the examination team members and the facility contact, such as: arranging to review the examination; scheduling the entrance and exit meetings; ensuring that examination security is

maintained; implementing the operating test schedule; ensuring that the written examination is properly administered; and, keeping the RTROL BC informed of any problems.

3. Under the direction of a certified Chief Examiner and in accordance with ES-303N, ES-403N, and ES-501N, coordinate all the administrative activities associated with documenting and issuing the examination results. This should include: resolving the facility comments; grading and reviewing the written exams and operating tests; preparing the license, denial, and notification letters; preparing the examination report; and, ensuring that the required examination files are generated.

DOCUMENTATION: RTROL Chief Examiner Signature and Certification Card OJT-RTROLE-5

RTROL Examiner Signature and Certification Card

<i>RTROL Examiner Candidate Name:</i> _____	<i>Employee Initials/ Completion Date</i>	<i>RTROL Branch Chief's Signature/Date</i>
A. Training Courses		
Research and Test Reactor Series: <ul style="list-style-type: none"> • Introduction (R-106) • Regulatory Oversight (R-206) • Nuclear Theory (R-306) • Operation (R-406) 	_____ _____ _____ _____	_____ _____ _____ _____
Examination Techniques Course (G-107) <ul style="list-style-type: none"> • Written • Operating (<i>Optional</i>) 	_____ _____	_____ _____
Principles of Nuclear Engineering (E-310) (<i>Optional</i>)		
B. Individual Study Activities		
ISA-RTROLE-1 - Navigating the NRC's Operator Licensing Web Pages		
ISA-RTROLE-2 - History and Organization of the Operator Licensing Program		
ISA-RTROLE-3 - License Eligibility Requirements and Guidelines		
ISA-RTROLE-4 - Technical Specifications		
ISA-RTROLE-5 - Operator Licensing Process: Pre-Examination and Application Activities		
ISA-RTROLE-6 - Operator Licensing Process: Operating Tests		
ISA-RTROLE-7 - Operator Licensing Process: Written Examinations		
ISA-RTROLE-8 - Operator Licensing Process: Post Examination Peer Review		
ISA-RTROLE-9 - Operator Licensing Process: Reviews and Hearings		
ISA-RTROLE-10 - Operator Licensing Process: Requalification, Requalification Examination, Failures, Reviews, Hearings, and Other License Conditions		
ISA-RTROLE-11 – Operator Licensing Process: SRO Limited to Fuel Handling		

C. On-the-Job Training Activities		
OJT-RTROLE-1 - a. Observe Initial Licensing Examination b. Observe Initial Licensing Examination	_____ _____	_____ _____
OJT-RTROLE-2 - Prepare, Administer, and Grade an Operating Test		
OJT-RTROLE-3 - Prepare, Administer, & Grade a Written Test		

Record completion in TMS by sending a request to TrainingSupport.Resource@nrc.gov.

OL Examiner Certification

Has successfully completed all of the requirements to become an

Research and Test Reactors Operator Licensing Examiner

RTROL BC Signature: _____ Date: _____

Division Director Signature: _____ Date: _____

RTROL Chief Examiner Signature and Certification Card

<i>RTROL Chief Examiner Candidate Name:</i> _____	<i>Employee Initials/ Completion Date</i>	<i>RTROL Branch Chief's Signature/Date</i>
D. Additional Chief Examiner On-the-Job Training Activities		
OJT-RTROLE-4 - Participate on Licensing Examination Teams		
OJT-RTROLE-5 - Lead an Initial Examination Team		

Record completion in TMS by sending a request to TrainingSupport.Resource@nrc.gov.

RTROL Chief Examiner Certification

Has successfully completed all of the requirements to become an

Research and Test Reactors Operator Licensing Chief Examiner

RTROL BC Signature: _____ Date: _____

Division Director Signature: _____ Date: _____

Form 1: OL Examiner Technical Proficiency Level Equivalency Justification

<i>RTROL Examiner Candidate Name:</i> _____	Identify equivalent training and experience for which the examiner is to be given credit.
A. Training Courses	
Research and Test Reactor Series: <ul style="list-style-type: none"> • Introduction (R-106) • Regulatory Oversight (R-206) • Nuclear Theory (R-306) • Operation (R-406) 	
Examination Techniques Course (G-107) <ul style="list-style-type: none"> • Written 	
B. Individual Study Activities	
ISA-RTROLE-1 - Navigating the NRC's Operator Licensing Web Pages	
ISA-RTROLE-2 - History and Organization of the Operator Licensing Program	
ISA-RTROLE-3 - License Eligibility Requirements and Guidelines	
ISA-RTROLE-4 - Technical Specifications	
ISA-RTROLE-5 - Operator Licensing Process: Pre-Examination and Application Activities	
ISA-RTROLE-6 - Operator Licensing Process: Operating Tests	
ISA-RTROLE-7 - Operator Licensing Process: Written Examinations	
ISA-RTROLE-8 - Operator Licensing Process: Post Examination Peer Review	
ISA-RTROLE-9 - Operator Licensing Process: Reviews and Hearings	
ISA-RTROLE-10 - Operator Licensing Process: Requalification, Requalification Examination, Failures, Reviews, Hearings, and Other License Conditions	
ISA-RTROLE-11 – Operator Licensing Process: SRO Limited to Fuel Handling	

Supervisor's Recommendation: Signature / Date _____

Division Director's Approval: Signature / Date _____

Copies to: Examiner
 Supervisor

Attachment 1: Revision History for IMC 1245 Appendix C16

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre-Decisional, Non-Public Information)
N/A	ML20196M014 09/09/21 CN 21-030	Initial issue to support qualification and training of research and test reactor operator licensing program staff.	None	ML20197A222